
A New Species of *Hymenocallis* (Amaryllidaceae) in the Florida Panhandle

Gerald L. Smith

Biology Department, High Point University, University Station-Montlieu Avenue,
High Point, North Carolina 27262-3598, U.S.A.

Melanie Darst

U.S. Geological Survey, 227 N. Bronough St., Suite 3015, Tallahassee,
Florida 32801-1372, U.S.A.

ABSTRACT. A new species of spider-lily, *Hymenocallis godfreyi*, is described and illustrated. It is a rare endemic that occurs in the St. Marks marsh at the confluence of the St. Marks and Wakulla Rivers, Florida. Its striking features are contrasted to an allied species, *Hymenocallis rotata* (Ker-Gawler) Herbert.

The taxonomy of the spider-lilies, *Hymenocallis* (Amaryllidaceae), inhabiting the clear water of springs and spring-fed streams in north Florida has presented a perplexing problem. There is little consensus about the identities of these populations (Small, 1933; Morton, 1935; Sealy, 1954; Traub, 1962; Clewell, 1985). Godfrey & Wooten (1979) stated that it was futile to attempt to delimit spider-lily species because of the scarcity and poor quality of many spider-lily herbarium specimens and because so little literature has been published about spider-lily populations in the wild.

Along the Wakulla River south of Tallahassee, magnificent clumps of spider-lilies with large starlike flowers delight canoers and other boaters each June. Field and herbarium studies of these have revealed that they are distributed in spring-run systems extending to the Atlantic coast of Florida and down the peninsula.

A review of pertinent taxonomic literature indicates that these populations have been described as *Pancratium rotatum* Le Conte (1836), *Hymenocallis laciniata* Small (1933), and *H. floridana* (Rafinesque) Morton (1935), but all of these names are considered to be synonyms. The name determined to have priority is *Hymenocallis rotata* (Ker-Gawler) Herbert (1821). Ker-Gawler (1805) described the species as *Pancratium rotatum* in the *Botanical Magazine*. He presented a description and a plate showing a flowering scape. The flowers,

drawn in intricate detail, are unmistakably the unique form displayed by the north Florida spring-inhabiting spider-lily species.

At the confluence of the St. Marks and Wakulla Rivers at the community of St. Marks, which is about 20 miles south of Tallahassee, is a slightly brackish marsh dominated by *Juncus roemerianus* Scheele and *Cladium jamaicense* Crantz. In years when the marsh has been burned in the winter, an amazing display of a two-flowered spider-lily begins by early to mid March. Within a few weeks, the plants dominate the landscape (Robert Godfrey, pers. comm.).

In spring of 1990, Robert Godfrey brought this spider-lily to the attention of the authors for critical analysis. He supplied us with descriptions of field characteristics, vouchers, and bulb collections. We compared the characteristics of this marsh spider-lily to those of *Hymenocallis rotata*, to which it appeared similar. Although some similarities exist, as will be discussed below, there are notable differences in the bulbs, leaves, flowers, capsules (Fig. 1), and in the habitats and flowering times of the two. On the basis of these differences, the marsh spider-lily was considered a separate species, *H. godfreyi*.

The measurements presented in the description, with the exception of the seed and fruit dimensions, were made from pressed dried herbarium specimens. Therefore, useful comparisons can be made with other herbarium specimens of *Hymenocallis*.

Both *Hymenocallis rotata* and *H. godfreyi* have $2n = 48$ chromosomes, indicating that they are related. A drawing of the chromosomes of *H. godfreyi* is shown in Figure 2. A preliminary comparison of the karyotype of the marsh spider-lilies with that of *H. rotata* indicates that although there are a number of common chromosome types there are also some differences in the chromosome types be-

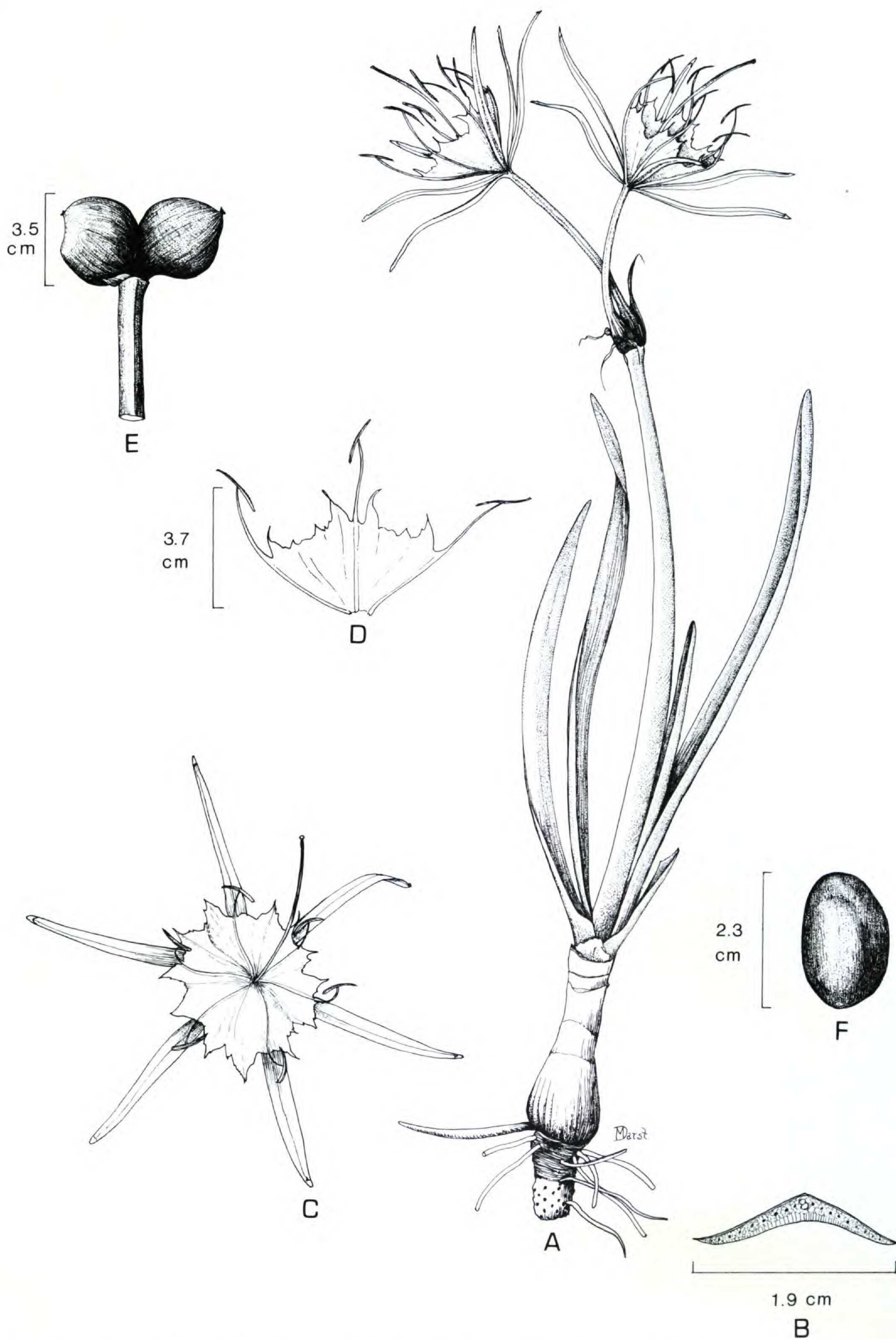


Figure 1. *Hymenocallis godfreyi* G. Lom. Smith & M. Darst. —A. Habit. —B. Leaf cross section. —C. Flower frontal view. —D. Section of staminal cup. —E. Fruits. —F. Seed. (Based on *Godfrey 83721*; drawn by M. Darst.)

tween the two. Variability in chromosome types and numbers in the spider-lilies is well documented (Flory, 1975, 1976; Smith & Flory, 1990).

Hymenocallis godfreyi G. Lom. Smith & M. Darst, sp. nov. TYPE: U.S.A. Florida: Wakulla Co., San Marcos de Apalache, marsh near confluence of Wakulla and St. Marks Rivers, 16 Mar. 1990, *Godfrey 83721* (holotype, FSU; isotypes, FLAS, MO, NY, USF). Figure 1.

Herba bulbo ovoideo, rhizomatoso, 3–4.5 cm longo, 2.5–3.5 cm lato, collo 2–3 cm longo; scapo ancipiti, non glauco, 2–3 dm longo. Folia 3–6, lorata, coriacea, non glauca, flavovirentia, (1.3–)2–3.8 dm longa, 1–2(–2.5) cm lata. Flores 2; perianthii tubo viridi, 4.5–7.5(–8.5) cm longo, segmentis 7–10.5 cm longis, 5–8 mm latis; poculo staminali infundibuliformi, marginibus erectis, 3–4(–4.5) cm longo, 5 cm lato; filamentis liberis (1.5–)2–3 cm longis; antheris 1.2–1.5 cm longis; polline aureo. Capsula subglobosa, 3.5 cm longa, 2.5 cm lata; seminibus carnis, obovoideis, viridibus, 2–2.5 cm longis, 1.3–1.8 cm latis.

Bulb ovoid, rhizomatous, 3–4.5 cm long, 2.5–3.5 cm wide, neck 2–3 cm long, caudex 1.5–2.0 cm long, tunica papery gray. Leaves 3–6, lorate, channeled, coriaceous, nearly erect, nonglaucous, yellow-green, apex obtuse to subacute, (1.3–)2–3(–3.8) dm long, 1–2(–2.5) cm wide, deciduous, appearing with the scape. Scape two-edged, nonglaucous, 2–3 dm long; 2 scape bracts enclosing the bud, 4–5 cm long, 1–1.5 cm wide, each flower with a subtending, narrowly lanceolate bract, 3.5–5 cm long, 0.5–1.0 cm wide. Flowers 2, one opening slightly before the other, sessile, slightly diverging, fragrant; perianth tube green, 4.5–7.5(–8.5) cm long; perianth segments linear-lanceolate, slightly ascendent, white with sepals green-striped on keel, 7–10.5 cm long, 5–8 mm wide. Staminal cup white with small yellow-green eye, broadly funnellform, margins erect, two prominent dentate horns between each free filament, 3–4(–4.5) cm long, ca. 5 cm wide; free filaments white, slightly incurved, inserted at a flattened base, (1.5–)2–3 cm long; anthers 1.2–1.5 cm long, pollen golden. Style green in upper half, fading to white, 13–17 cm long, stigma capitate. Ovary oblong to slightly pyriform, 1.5–2.5 cm long, ca. 1 cm wide; ovules 4 per locule. Fruit a subglobose, leathery, green capsule, ca. 3.5 cm long, 2.5 cm wide. Seeds fleshy, obovoid, green, 2–2.5 cm long, 1.3–1.8 cm wide.

Hymenocallis godfreyi, the St. Marks marsh spider-lily, is a rare endemic that grows in a seemingly fire-dependent habitat. It begins to bloom in early to mid March in areas of the marsh burned during the winter. Flowering continues into May.



Figure 2. Chromosomes of *Hymenocallis godfreyi* at mitotic metaphase prepared by G. Lom. Smith from *Godfrey 83697*. The scale equals 10 μ m. (Ink preparation by M. Garland.)

The bulb is small, narrowly ovoid, and rhizomatous. At anthesis, *H. godfreyi* is distinguished by its short scape, short, coriaceous, yellow-green leaves, broadly funnellform staminal cup with dentate marginal horns, and short perianth tube. At maturity each scape bears two subglobose fruits.

In contrast, *Hymenocallis rotata* grows along spring-run streams of northern and peninsular Florida and blooms from early June to early July. It has large, coriaceous, strap-shaped, deep green leaves reaching nearly a meter in length and 4–5(–7) cm in width. The bulb system is massive, and, as with *H. godfreyi*, is rhizomatous. The flowering scape has 2–4 flowers. At full anthesis, the staminal cup is nearly rotate with a tubulose base and measures 4.5–5.5 cm in length and nearly 8 cm in diameter; the dentate horns of the staminal cup margin are highly prominent. The perianth segments extend horizontally from the base of the staminal cup and are about the same length as the perianth tube. The capsules are obovoid and elongated at maturity.

Although there are distinct differences between *Hymenocallis godfreyi* and *H. rotata*, there are also similarities, as in the pattern of the staminal cup margin, the size and insertion of the free filaments, the anther size, and chromosome number. The location of this marsh spider-lily with respect to the range of *H. rotata* and the similarities between the two indicate that *H. godfreyi* probably evolved from *H. rotata*.

During the Pleistocene, dispersal of *Hymenocallis rotata* seeds likely occurred down the St. Marks River to the marsh. The spider-lilies probably became established in the marsh and began to respond to the new environmental conditions as natural selection influenced the development of the marsh population toward its present form. Divergence has progressed to the point that the authors believe these distinctive plants warrant classification as a new species.

This new species is named in honor of Robert K. Godfrey, Professor Emeritus of Florida State University. Godfrey has provided much encouragement and support for spider-lily studies by assisting with numerous field studies, making numerous bulb and seed collections, preparing the highest quality herbarium vouchers, and providing the identification of associated plants.

Paratypes. U.S.A. **Florida:** Wakulla Co., San Marcos de Apalache, marsh near confluence of Wakulla and St. Marks Rivers, 1843 or 1845, *Rugel 165* (FLAS), 14 Mar. 1976, *Godfrey 74656* (FSU, GA, MO, NCU), 20 Mar. 1976, *Leonard 6240* (FSU), 5 Mar. 1990, *Godfrey 83697* (FLAS, FSU, MO), 22 Mar. 1990, *Godfrey & Gholson 83742* (FSU, FTG, GA, MO, Herb. Gholson), 31 Mar. 1991, *Godfrey 84076* (FSU).

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